CLAIM(S)

What is claimed is:

1. A method of Halftone Super-cell optimization for artifact reduction, comprising the steps of:

receiving a halftone value;

selecting a group of super-cells, each super-cell having a plurality of sub-cells;

randomly selecting a code-value for each super-cell; and

biasing the sub-cells of each super-cell based on its randomly selected code-value;

wherein the total of the randomly selected code-value for the group of super-cells equals the halftone value.

2. The method of claim 1 wherein each super-cell has sub-cells growing in a pre-determined but different manner.

3. The method of claim 1 wherein the number of sub-cells per super-cell is selected from group consisting of 16, 64, and 128.

4. The method of claim 1 wherein the total of the randomly selected code-value for the group of super-cells is based on the average value of all the super-cells.

5. A method of Halftone Super-cell optimization for artifact reduction, comprising the steps of:

receiving a halftone value;

selecting a group of super-cells, each super-cell having a plurality of sub-cells;

using a pattern to select sub-cells from each super-cell; and

biasing the selected group of sub-cells;

wherein the total of the selected group of sub-cells for the group of super-cells equals the halftone value.

6. The method of claim 5 wherein each super-cell has a different pattern for selecting sub-cells than all adjacent super-cells.

7. The method of claim 5 wherein the number of sub-cells per super-cell is selected from group consisting of 16, 64, and 128.

8. The method of claim 1 wherein the pattern is selected from the group consisting of a sine wave and a square wave.

9. A method of Halftone Super-cell optimization for artifact reduction, comprising the steps of:

receiving a halftone value;

selecting a group of super-cells, each super-cell having a plurality of sub-cells;

grouping sub-cells such that at least one group of sub-cells contains cells from at least two super-cells;

randomly selecting sub-cells based on a code value for each super-cell; and

biasing each grouping of sub-cells based on its randomly selected code-value;

wherein the total of the selected group of sub-cells for the group of super-cells equals the halftone value.

10. The method of claim 10 wherein each grouping of sub-cells has a different code-value than all adjacent groupings of super-cells.

11. The method of claim 9 wherein the randomly selected group of sub-cells are selected based on a predetermined pattern.

12. The method of claim 11 wherein the overall pattern of growth within a group of sub-cells can differ in each individual sub-cell.

13. An image output apparatus, comprising:

means adapted to receive a halftone value;

means adapted to select a group of super-cells, each super-cell having a plurality of sub-cells;

means adapted to randomly select a code-value for each super-cell; and

means adapted to bias the sub-cells of each super-cell based on its randomly selected code-value;

wherein the total of the randomly selected for the group of super-cells equals the halftone value.

14. The image output apparatus of claim 13 wherein each super-cell has a different number of randomly selected sub-cells than all adjacent super-cells.

15. An image output apparatus, comprising:

means adapted to receive a halftone value;

means adapted to select a group of super-cells, each super-cell having a plurality of sub-cells;

means adapted to use a pattern to select sub-cells from each super-cell; and

means adapted to bias the selected group of sub-cells;

wherein the total of the selected group of sub-cells for the group of super-cells equals the halftone value.

16. The image output apparatus of claim 15 wherein each super-cell has a different pattern for selecting sub-cells than all adjacent super-cells.

17. The image output apparatus of claim 15 wherein the pattern is selected from the group consisting of a square wave, a sine wave, a crossing pattern, a vertical pattern and a horizontal pattern.

18. A image output apparatus, comprising:

means adapted to receive a halftone value;

means adapted to select a group of super-cells, each super-cell having a plurality of sub-cells;

means adapted to group sub-cells such that at least one group of sub-cells contains cells from at least two super-cells;

means adapted to randomly select a group of sub-cells from each grouping of sub-cells; and

means adapted to bias the randomly selected group of sub-cells;

wherein the total of the selected group of sub-cells for the group of super-cells equals the halftone value.

19. The image output apparatus of claim 18 wherein each grouping of sub-cells has a different number of randomly selected sub-cells than all adjacent groupings of super-cells.

20. The image output apparatus of claim 18 wherein the randomly selected group of sub-cells are selected based on a predetermined pattern.

21. The image output apparatus of claim 20 wherein the predetermined pattern for each grouping of sub-cells is selected from the group consisting of a square wave and a sine wave.

22. A computer program product having a computer readable medium having computer program logic recorded thereon for halftone super-cell optimization for artifact reduction, comprising:

means adapted to receive a halftone value;

means adapted to select a group of super-cells, each super-cell having a plurality of sub-cells;

means adapted to randomly select a group of sub-cells from each super-cell; and

means adapted to bias the randomly selected group of sub-cells;

wherein the total of the selected group of sub-cells for the group of super-cells equals the halftone value.

23. The computer program product of instructions of claim 22 wherein each super-cell has a different number of randomly selected sub-cells than all adjacent super-cells.

24. A computer program product having a computer readable medium having computer program logic recorded thereon for halftone super-cell optimization for artifact reduction, comprising

means adapted to receive a halftone value;

means adapted to select a group of super-cells, each super-cell having a plurality of sub-cells;

means adapted to use a pattern to select sub-cells from each super-cell; and

means adapted to bias the selected group of sub-cells;

wherein the total of the selected group of sub-cells for the group of super-cells equals the halftone value.

25. The computer program product of instructions of claim 24 wherein each super-cell has a different pattern for selecting sub-cells than all adjacent super-cells.

26. The computer program product of instructions of claim 24 wherein the pattern is selected from the group consisting of a square wave, a sine wave, a crossing pattern, a vertical pattern and a horizontal pattern.

27. A computer program product having a computer readable medium having computer program logic recorded thereon for halftone super-cell optimization for artifact reduction, comprising:

means adapted to receive a halftone value;

means adapted to select a group of super-cells, each super-cell having a plurality of sub-cells;

means adapted to group sub-cells such that at least one group of sub-cells contains cells from at least two super-cells;

means adapted to randomly select a group of sub-cells from each grouping of sub-cells; and

means adapted to bias the randomly selected group of sub-cells;

wherein the total of the selected group of sub-cells for the group of super-cells equals the halftone value.

28. The computer readable medium of instructions of claim 27 wherein each grouping of sub-cells has a different number of randomly selected sub-cells than all adjacent groupings of super-cells.

29. The computer readable medium of instructions of claim 27 wherein the randomly selected group of sub-cells are selected based on a predetermined pattern.

30. The computer readable medium of instructions of claim 29 wherein the predetermined pattern for each grouping of sub-cells is selected from the group consisting of a square wave and a sine wave.